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EXAMINER

MENON, KRISHNAN S

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1723

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 09/916,247
Filing Date: July 30, 2001
Appellant(s): COTE ET AL.

MAILED

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GROUP 1700

Scott Pundsack
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 3/3/06 appealing from the Office action
mailed 10/5/05.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The following are the related appeals, interferences, and judicial proceedings known to the examiner which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal:

Copending applications 10/461,687 and 09/425,234 are also on appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

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(8) Evidence Relied Upon

5,403,479	SMITH et al	04-1995
6,331,251	DEL VECCHIO et al	12-2001

Application 11/106,681 for double patenting.

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Double Patenting

1. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

Claims 26-29, 31 and 33 are provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 1-6 of copending Application No. 11/106,681. This is a provisional double patenting rejection since the conflicting claims have not in fact been patented.

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a

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patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 26-36 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 7-23 of copending Application No. 11/106,681. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims in both applications recite process for filtering water containing solids and cleaning an immersed membrane system. The basic process steps are similar, except for minor variations in the concentrations of the cleaning chemicals and/or the periods/periodicity of various process steps, which are within the skill of one of ordinary skill in the art.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

3. Claims 26-36 are rejected under 35 U.S.C. 102(b) as being anticipated by Smith et al (US 5,403,479).

Smith (479) teaches a process of filtering water containing solids by immersing a membrane in a tank at ambient pressure (col 2 lines 63-66 and col 1 lines 53-66) containing the water and providing a trans-membrane pressure, with permeate side subjected to a negative pressure relative to the feed side for the filtration (Fig 2,7; col 15 line 63-col 16 line 10; see abstract of the ref incorporated in col : US, 5,248,424 to Cote. Et al.), with the permeate side connected to permeate outlet (line 22, and tank 27, fig 2), the membrane aerated (col 16 lines 20-25), backwashing, with wetting the membrane at least once a week (periodicity of this step can be seen in Fig 4) with a cleaning fluid of select concentration, periodically for a select period (col 15 table, lines 16-47, col 18 lines 13-29; col 11 lines 22-61).

Re the limitations 'and a retentate in the tank', it is inherent; what remains in the tank is 'retentate' after 'permeate' is removed from the feed by the process.

Regarding the draining of the tank wholly or partially, and during or after backwashing, Smith discusses about draining the tank in detail during cleaning in the "back-ground of the invention", but teaches that draining the tank is not necessary during the cleaning process (col 10 lines 64-68, col 11 lines 22-30). However, a reference may be relied upon for all that it would have reasonably suggested to one having ordinary skill the art, including nonpreferred embodiments. *Merck & Co. v. Biocraft Laboratories*, 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), cert. denied, 493 U.S. 975 (1989). See also *Celeritas Technologies Ltd. v. Rockwell International Corp.*, 150 F.3d 1354, 1361, 47 USPQ2d 1516, 1522-23 (Fed. Cir. 1998). Disclosed examples and preferred embodiments do not constitute a teaching away from a broader

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disclosure or nonpreferred embodiments (In re *Susi*, 440 F.2d 442, 169 USPQ 423 (CCPA 1971)). "A known or obvious composition does not become patentable simply because it has been described as somewhat inferior to some other product for the same use. In re *Gurley*, 27 F.3d 551, 554, 31 USPQ2d 1130, 1132 (Fed. Cir. 1994). Also, a reference is no less anticipatory if, after disclosing the invention, the reference then disparages it. The question whether a reference "teaches away" from the invention is inapplicable to an anticipation analysis. *Celeritas Technologies Ltd. v. Rockwell International Corp.*, 150 F.3d 1354, 1361, 47 USPQ2d 1516, 1522-23 (Fed. Cir. 1998).

Re when to drain the tank, the 'Markhush group' claim language "either before the other or partially or simultaneously" covers all the possibilities there are: before, during or after the cleaning step, and fully or partially; and therefore, is anticipated by Smith.

Backwashing is done after the permeation step (see col 11 lines 22-61).

Claim 27: The cleaning is between once a day and once a cycle (see fig 6; col 13 lines 50-57).

Claim 28: The cleaning is carried out to maintain an acceptable permeability of the membrane as in instant claim 28 (col 13 lines 50 – 57, col 18 lines 5-12) and the cleaning steps from time to time is to increase the flux and reduce the rate of decline of flux in Smith (col 10 lines 64-68, col 11 lines 22-30)

Claims 29 and 30: The sum of the products of chemical concentration and duration of cleaning between 5,000 and 10,000 min.mg/L or equivalent for another cleaning chemical (col 11 lines 30-35: time less than an Hr, sufficient to diffuse enough

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cleaning solution ... ; table line 9: NaOCl at 100 ppm, col 15 lines 34-36: cleaning solution at 10 ppm; these provide the CT values within the claimed range of 2000-20,000 min.mg/L per week for at least one month). Also, these ranges are optimizable depending on the water quality and membrane flow rates. In re Boesch and Slaney.

Claim 31: recovery cleaning at least one month apart: Figure 4 gives more and less rigorous alternatives for cleaning over a 15-day period, and Smith teaches the cleaning process as a periodic process (col 1 lines 18-22). It may be noted that the type and frequency of cleaning would depend on the water quality and the fouling characteristics of the membrane, and one of ordinary skill in the art could optimize it. Discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art. In re Boesch and Slaney, 205 USPQ 215 (CCPA 1980); In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977); In re Aller, 42 CCPA 824, 220 F.2d 454, 105 USPQ 233 (1955).

Claim 32: permeate is used as drinking water: intended use of the product made: Smith ref teaches purifying "ground water" in col 20 lines 35-43. Ground water is well known as a source of drinking water. [Also, please note that a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987)]. Cleaning chemical is an oxidant – hypochlorite is an oxidant.

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Claims 33-35: cleaning at regular intervals, mixing cleaning chemicals in flowing water in permeate side: see abstract and figures of Smith. Re mixing cleaning chemical in flowing water, Smith teaches flowing water containing the cleaning chemical, the cleaning chemical being mixed in the water in a chemical feed tank, which is equivalent. Re backwashing with permeate after backwashing with cleaning chemical, see col 12 lines 56-68.

Claim 36: Membrane is hollow fiber in smith – see abstract.

4. Claims 26-28, 31 and 33-36 are rejected under 35 U.S.C. 102(e) as being anticipated by Del Vecchio et al (US 6,331,251).

Claim 26: Del Vecchio teaches a process of filtering water containing solids using immersed membranes (see abstract and figures) by creating a trans-membrane pressure with permeate side at a lower pressure as claimed, retentate remains in the tank (Please note that Del Vecchio uses the term “substrate” for the contaminated water to be cleaned). Membrane is aerated during normal operation and for cleaning (see column 6 lines 15-28, column 7 line 64 – column 8 line 5 and column 11 lines 9-31). Backwashing the membrane (reverse flow cause permeate to flow in the opposite direction) – column 11 lines 31-46. Draining the tank – column 11 lines 46-58. Tank is drained after the cleaning cycle also – see column 12 lines 40-48. (Claim language is open to cleaning at any time: during, before or after the backwashing cycle. Draining the tank before or after the deep cleaning in the reference happens after a back-wash cycle). Pulsed cleaning can also be introduced during the deep cleaning – see column

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12 lines 30-40: this would be back flush when the tank is in the drained state. The “wetting of the membrane with a cleaning chemical” is the soaking step in the reference – the membrane is wet with a cleaning chemical in this step. Column 11 lines 59-67, column 12 lines 12-30. Frequency and duration – see column 12 lines 12-30.

Claim 27: part (i) repeated at least once a day – see column 10 lines 4-8 (pulse cleaning is with backwash). Step (f) (wetting, or deep cleaning in the reference) is repeated. Deep cleaning duration and intervals can be selected depending on the need of the system – column 12 lines 12-40.

Claim 28, 31: recovery cleaning – the deep cleaning, or deep cleaning with additional back-flush cleaning (column 12 lines 30-40) can be recovery cleaning, depending on need. One month apart – column 12 lines 19-22.

Claim 33: Step (f) performed at regular intervals with same product of concentration and duration – this is implied in column 12 lines 10-30. “[I]n considering the disclosure of a reference, it is proper to take into account not only specific teachings of the reference but also the inferences which one skilled in the art would reasonably be expected to draw therefrom.” *In re Preda*, 401 F.2d 825, 826, 159 USPQ 342, 344 (CCPA 1968); *In re Lamberti*, 545 F.2d 747, 750, 192 USPQ 278, 280 (CCPA 1976).

Claim 34: back washed with permeate after step (f) – see column 12 lines 30-40. This step would be after “wetting” (or soaking – see column 12 lines 12-15) the membrane.

Claim 35: flowing permeate to the permeate side – the reverse flow step in pulse cleaning. Mixing cleaning chemical in flowing water – see column 11 lines 62-65 and column 12 lines 30-40.

Claim 36: Hollow fiber membrane – treatment system same as that of the applicant's – see column 1 lines 23-33.

Claim Rejections - 35 USC § 103

5. Claims 29,30 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Del Vecchio as applied to claim 26 above, and further in view of Smith'479.

Instant claims differ from the teaching of Del Vecchio in reciting the cleaning chemical comprising an oxidant, the range of the min.mg/L of the cleaning chemical and that the permeate is intended as drinking water. Permeate intended as drinking water is intended use of the product made, and is not a patentable limitation. See, e.g., *In re Otto*, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963) (The claims were directed to a core member for hair curlers and a process of making a core member for hair curlers. Court held that the intended use of hair curling was of no significance to the structure and process of making.). Smith teaches using hypochlorite as cleaning chemical in a similar process – see examples. It would be obvious to one of ordinary skill in the art at the time of invention to use the teaching of Smith in the teaching of Del Vecchio for the cleaning chemical because Del Vecchio does not specify a cleaning chemical, and Smith provides the details of the use of the cleaning chemical for the same or similar process.

(10) Response to Argument

This application is one among a series of applications filed over the last six years, as can be seen in the continuity data in the application records. The subject matter covered in these series of applications is about processing wastewater streams in large tanks using submerged membranes, and, particularly, the cleaning of the membranes as they become fouled by the wastewater. Two of these applications are pending on appeal along with this application, which are 10/461,687 and 09/425234.

Double-Patenting Rejections:

Appellants are not contesting the double patenting rejections.

102(b) rejection of claims 26-36 over the Smith reference:

Claims 26 and 27: The inventive step of the claim allegedly missing from the Smith reference is "draining the tank".

Smith teaches in the background information the difficulties associated with draining the tank for cleaning the membranes, and goes on to teach a method wherein the draining the tank becomes unnecessary. One need to realize that these are huge tanks full of wastewater such as sewage water, and tank draining has associated logistic problems. Appellant claims a method similar to the Smith teaching, except for the draining of the tank. Since the Smith reference teaches about draining the tank and then provides an improved method wherein such draining is not required, the Smith reference anticipates the claim.

In the top paragraph of page 8 of the brief, appellant argues that the Smith reference differs in at least two ways from the prior art. Please note that this is about Smith's prior art, which has no bearing on the presently claimed invention. About the claim limitation of wetting the membrane with cleaning solution, Smith wets the membrane with cleaning solution by reverse flow from the inside of the membrane to the outside.

The entire argument submitted by the appellant can be summed up as: Smith reference teaches the process without draining the tank; therefore the claim is allowable because it recites draining the tank. Examiner disagrees because the Smith reference describes the problems associated with draining the tank in detail and then teaches the improved process. Moreover, even if the Smith reference were completely silent over the draining of the tank, this claim would still be not patentable for draining the tank, because people commonly drain the process equipment for cleaning, and such a step would not make the claim patentable.

The case law "In re Bond 910 F2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990), quoted by the appellant, is not relevant to this case: it deals with a means + function claim, in which the court remanded the case to the board to examine if the structure in the reference was equivalent to the structure disclosed in the application to meet 35 USC 112 sixth paragraph. The Smith reference teaches every element of the claim identically; and arranged as in the claim, including the element of the claim 'draining the tank' because the reference teaches that the step of draining the tank is not necessary before cleaning with the cleaning chemicals.

Claim 28 recites further steps of "recovery cleaning" from time to time to increase permeability. Smith's teaching of the cleaning process is precisely for this, as shown in the rejection, particularly, column 11 lines 20-61. Please note that appellant has not recited any detail of this "recovery cleaning" to be patentably distinct.

Claim 29 and 30: the weekly CT value is a product of the cleaning chemical concentration and the cumulative time period for the cleaning step over a week. How the reference meets this limitation is made clear in the rejection. In any case, the weekly CT is a result-effective variable, which can be optimized depending on the quality of the contaminated water and the process flow rate.

Claim 31: Would the Smith's teaching of a more frequent "recovery" cleaning than at least one month apart make this claim not anticipated by Smith? The argument that the figure 4 is only for an experiment lasting 16 days is not convincing: the purpose of the experiment in Smith is to develop a long-term cleaning regimen.

Claim 32: the permeate is intended for use as drinking water: the intended use of the product would not make the process of making the product patentable. Smith reference teaches oxidant cleaning chemicals such as hypochlorite all over the reference.

Claim 33: claim 33 does not have any specific limitation.

Claim 34: as in claim 26, backwashing with permeate is unnecessary, as is seen in column 12 lines 56-68, because the oxidizing chemical is so low. Smith implies these steps as unnecessary.

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Claim 35: the chemical is mixed in the chemical feed tank in Smith, which makes the chemical mixed in the flowing water, because Smith also teaches recirculating the water through the tank – see column 17 lines 45-56.

Claim 36: Smith teaches hollow fiber.

102(e) rejection over the Del Vecchio reference:

Del Vecchio teaches the same or similar process as claimed, with the same system.

Claim 26: the alleged inventive step of the claim over the reference is the frequency of “once a week”. The examiner believes that the reference has sufficient teaching to anticipate this in the cited paragraphs.

Claim 27: the claim recites at least once a day, which does not necessarily mean that it must happen every day; therefore, the reference does anticipate this frequency.

Claims 28 and 31: the “recovery cleaning” is not specified in the claim to be patentable over the reference. The cited paragraphs of the reference does teach that the intensity of the cleaning and the frequency can be varied as needed, depending on the built up of the biofilm. Column 12 lines 30-40 also teaches that a combination of pulsed cleaning and deep cleaning can be performed.

Claim 33: the examiner erroneously included claim 33 in the anticipated rejection part, it should have been under the 103 rejection, because of its dependency on claim 29. However, this does not make the claim patentable.

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Claim 34: contrary to the appellant's argument, the pulsed backwash with permeate can be after soaking with the cleaning chemical – see column 12 lines 30-40 in conjunction with column 12 lines 12-30.

Claim 35: column 12 lines 30-40 teaches mixing permeate with cleaning chemical to the interior of the hollow fibers. Column 11 lines 62-65 teaches mixing cleaning chemical in flowing water. Thus the claim is anticipated.

Claim 36: Del Vecchio teaches hollow fibers.

103 Rejection of claims 29, 30 and 32 over Del Vecchio in view of Smith:

Claim 32 is not patentable at least for the reason that the “drinking water” is an intended use of the product made. The cleaning chemical comprising an oxidant is taught by the Smith reference as shown in the rejection. Regarding claims 29 and 30, the weekly CT is a parameter that can be optimized depending on the quality of water treated, and the process flow, and is optimizable. Use of the hypochlorite is taught by the Smith reference. With respect to the reason to combine Smith with Del Vecchio, one of ordinary skill in the art would do so because Del Vecchio does not teach a specific cleaning chemical, other than chlorine solution (column 9 lines 45-48), hypochlorite (NaOCl) is equivalent to chlorine solution [Chlorine solution forms HOCl, hypochlorous acid with water; both NaOCl and HOCl release the nascent oxygen which does the cleaning by oxidation], and Smith teaches that the hypochlorite is very effective.

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(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,




3/20/06

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